

IN THE SPECIFICATION

Please replace the following paragraphs with the amended paragraphs as follows:

Paragraph [0020] beginning on page 4:

[0020] Figure 5 depicts a vertical, cross sectional view of the antenna; and

Paragraphs [0033] and [0034] beginning on page 7:

[0033] The power delivery circuit 300 comprises a power divider 304, a plurality of attenuators 306, 308, 310, 312 and 314, and at least one pair of phase shifters 316 and 318. The input power to the array is applied to terminal 312 (e.g., port) 324, which has, for example, a 50-ohm input impedance. In one embodiment of the invention, the antenna operates at approximately 5.8 GHz (e.g., frequencies in the UNII band). The power from port 312/324 is divided by the power divider 304 into five paths 305A-E, (i.e., a 1:5 power splitter). To ensure proper side lobe attenuation relative to the main beam of the antenna 110, each output from the power divider contains attenuation (a thinning of the stripline) to adjust the relative amplitudes of the signals. To maintain a low cost, the attenuation is produced in this fixed manner. Four of the signals are then applied to phase shifters 316, 318, 320 and 322. The center signal (path 305C) is not phase shifted and forms a phase reference for the other paths 305A, B, D, E.

[0034] To provide a low cost antenna, the phase shifters 316, 318, 320 and 322 operate by shifting the signals in discrete quantities using PIN diodes to vary the coupling within a hybrid coupler. Figure 7 depicts a schematic diagram of one of the phase shifters 316. The other phase shifters 318, 320 and 322 have the same structure. The exemplary phase shifter 316 comprises a hybrid coupler 700 and four PIN diodes 702A, 702B, 702C, 702D (collectively diodes 702). The diodes are spaced from one another along the branches 706A and 706B by an eighth of a wavelength and spaced from the cross arms 704A and 704B of the coupler 700 by an eighth of a wavelength. The diodes 702 can be selectively biased by control signals

to form a short to ground. In one embodiment of the invention, the phase shifters utilize the four PIN diodes 702 to shift the signal +90°, -90° or 0°. To facilitate phase shift selection, a control circuit 320 provides a bias voltage to the PIN diodes 702. When no bias is applied and the diodes form open circuits, the phase shift from input to output of the coupler 700 is -90 degrees. When diodes 702B and 702C are shorted to ground by biasing them, the phase shift through the coupler 700 is +90 degrees and, when diodes 702A and 702D are shorted to ground by biasing them, the phase shift through the coupler 700 is 0 degrees. These three discrete phase shifts may be applied to each of the four signal paths 305A, B, D, E. The shifted signals are applied to the array elements 302 through vias in the circuit board (see Figure 5 below).

Paragraphs [0035] and [0038] beginning on page 8:

[0035] Figure 4 depicts one embodiment of an arrangement for the antenna elements within the array 302. This embodiment comprises five active columns 400, 402, 404, 406 and 408. Each column 400, 402, 404, 406, and 408 comprises eight elements 400A-H, 402A-H, 404A-H, 406A-H, and 408A-H. Each element is a radiating patch. The number of elements in the column determines the vertical beam width of the antenna. More or less than 8 elements may be used in a column. Furthermore, in other embodiments of the invention, another type of radiating element, such as a slot, dipole or other aperture, could be used. Each element in a column is connected to a neighboring element by a conductor 410. Microwave power is coupled to/from each column using a via 514 (shown in FIG. 5) that is centrally located along the columns 402, 404, 406, 408. In the embodiment of the invention, each column is spaced one half wavelength from an adjacent column. Other column spacings could be used with some degradation in the beam pattern side-lobes, one half wavelength spacing provides the optimum side-lobe levels.

[0038] The phase shifters 316, and 318, 320 and 322 control the phase of the signal applied to each of the columns such that the antenna beam may be shifted in the horizontal plane (azimuth), but is fixed in the vertical plane (elevation). As described

above, to facilitate maximizing the signal strength coupled to rooftop nodes, the vertical spacing between the elements may be adjusted to provide a slight inclination to the main beam of the antenna pattern.